AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 124. NO. 20.
WHOLE NO. 3576.

NEW YORK, SATURDAY, MAY 15, 1926

Subscription, $3 Per Year
$4 Canada $5 Foreign

Library of Congress
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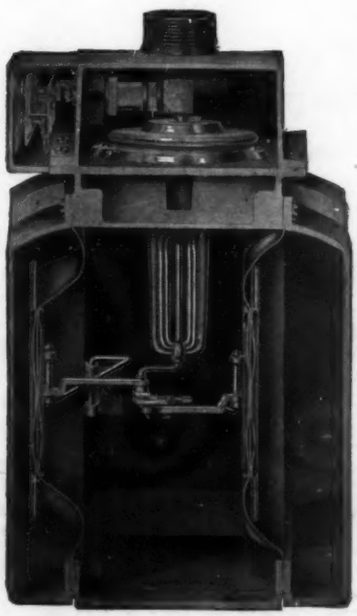

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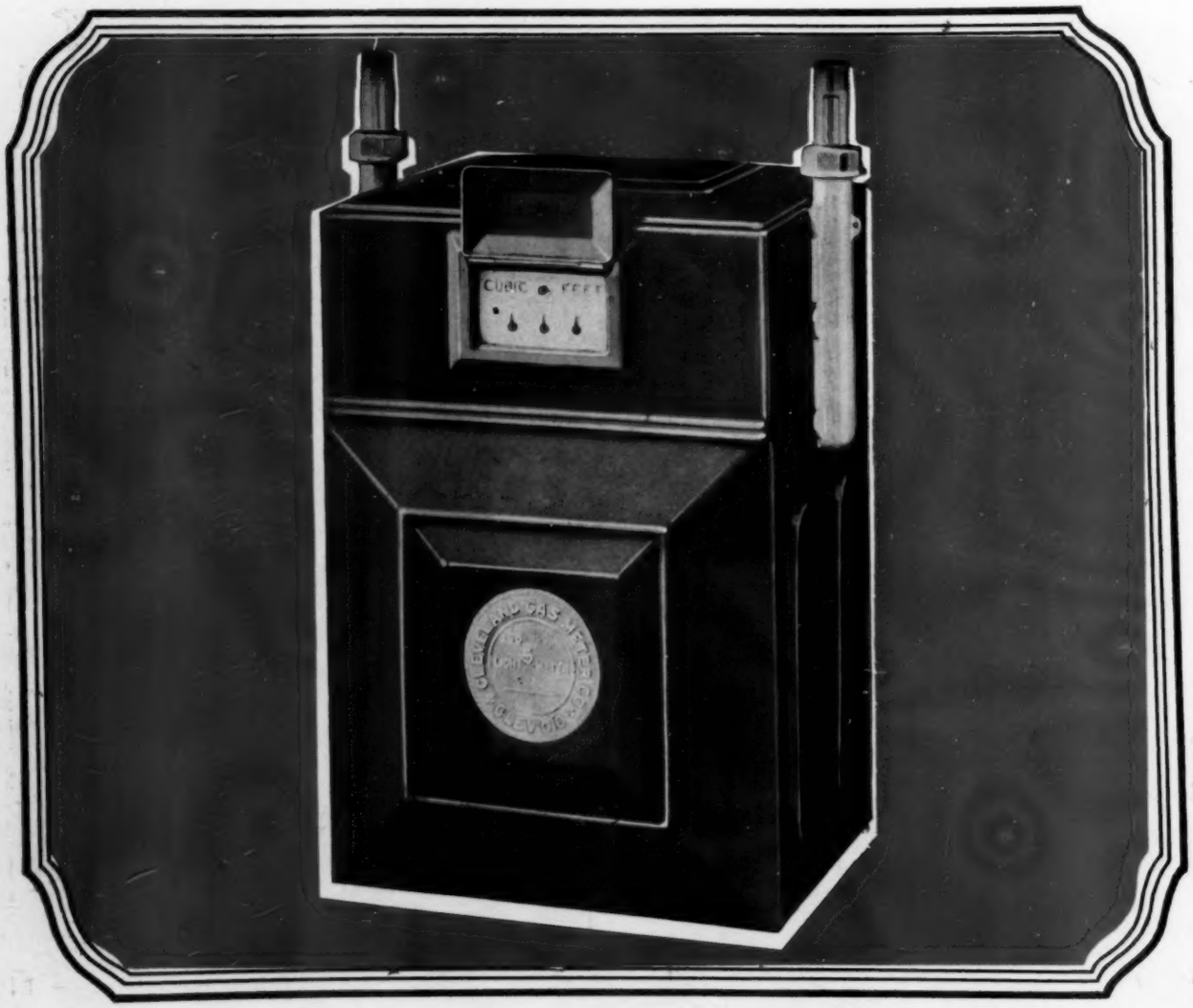

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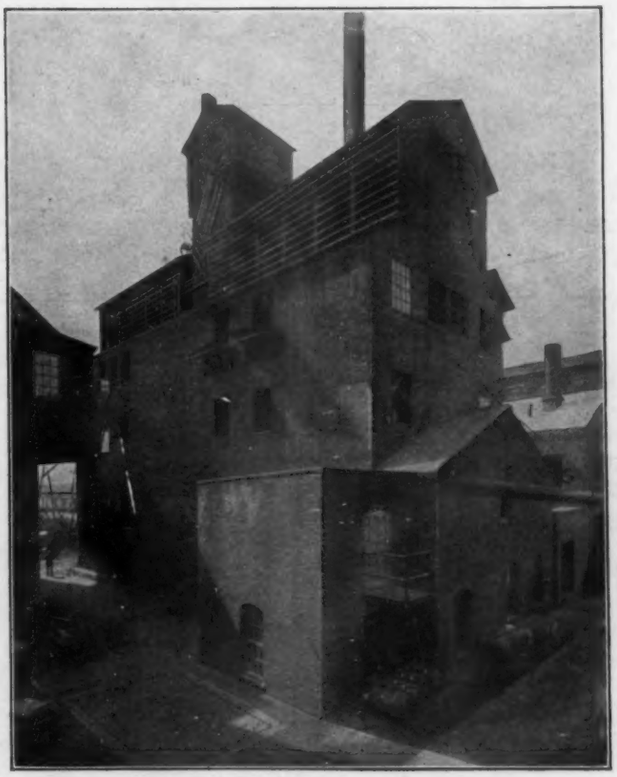

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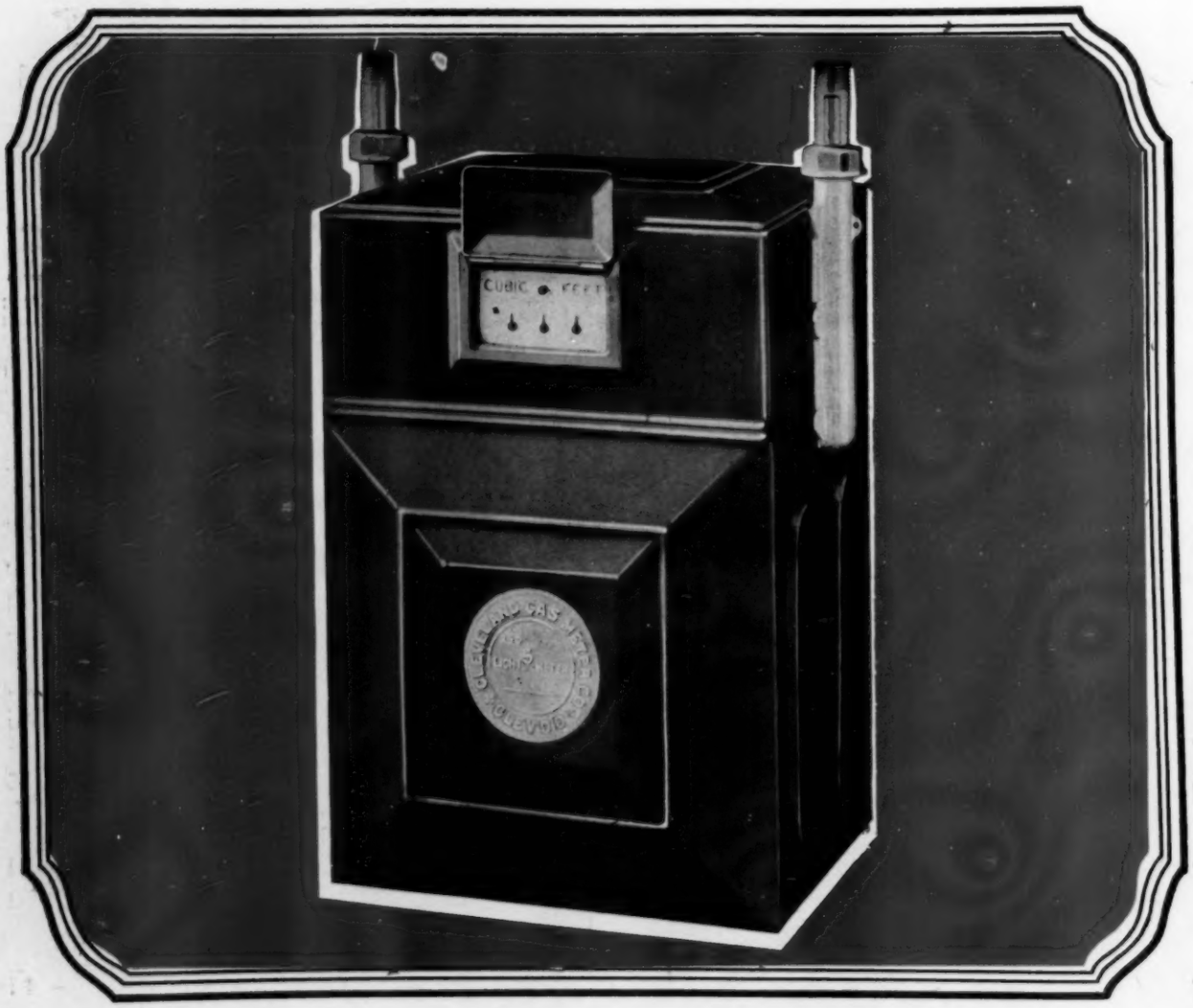

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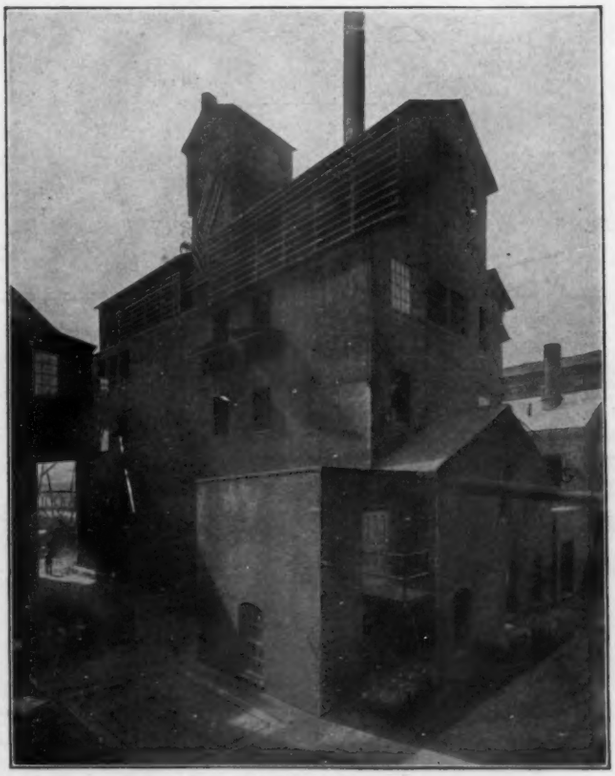

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American Gas Journal

SIXTY-SEVENTH YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. & Treas. C. S. MYERS, Vice-Pres. A. M. GLEASON, Sec'y.

STANTON G. KRAKE, Managing Editor ISMAR GINSBERG, Editor

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Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL, May 15, 1926. Vol. 124. No. 20.
Published weekly by American Gas Light Journal, Inc., New York, N. Y.
Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS JOURNAL

Established 1859—Pioneer of the Gas Industry

Vo. 124. No. 20. NEW YORK, MAY 15, 1926 Whole No. 3576

Building the Furnace to Fit the Job

Best results obtained when efficient apparatus is used

William F. Miller

Industrial Gas Department, Public Service Co. of Northern Illinois, Chicago, Ill.

IN making a survey of manufacturing equipment used in heat processes, it has been the writer's experience that the average Industrial Gas Engineer may recognize the inherent weaknesses of the usual application of competing fuels, but he fails to utilize this knowledge in the design of gas-fired furnaces.

He is prone to accept a standardized gas furnace for universal application on problems included in the general classification covered by the manufacturer's literature. This application may or may not fit the requirements of a special job. It may not utilize the superior inherent qualities of the fuel he sells, or the method of heat application may not yield maximum performance for the job to which it is applied.

It is the writer's idea to attract more attention to the application of gas to the special problem. This article will serve its purpose if it conveys only a general idea of how to attack a specific case.

Annealing of Steel

Articles made of sheet steel which are subjected to successive drawing operations during the process of fabrication, may require annealing between drawing operations to relieve internal stresses set up in the metal. Unless the metal is normalized after the initial draw, it may be ruptured during the next drawing operation.

Annealing is usually accomplished by raising the metal temperature to around 1600° F. and allowing it to cool again to atmospheric temperature. Perfect performance is approached only when this heating and cooling can be accomplished with absence of objectionable scale formation, at low unit production fuel cost, and at maximum production capacity of uniform product.

Scale is usually formed by the metal being processed in an improper atmosphere. If the atmosphere is composed of products of combustion, corrosive elements such as sulphur and free carbon must be avoided. The atmosphere must be lacking in free oxygen content, due either to excessive air required for combustion or by allowing the metal to cool in contact with air. An ideal atmosphere is usually neutral or slightly reducing in character.

Fuel Cost and Efficiency of Combustion

Low unit production fuel cost depends upon efficiency of combustion, flexibility of control, and reduction to a minimum of heat losses. Maintenance and labor costs should also be considered as an item of fuel cost. The basic cost of a fuel is not its true cost. The final overall cost of fuel per unit of perfect product should be the determining factor in the selection of the fuel to be utilized.

Maximum production influences plant capacity and plant investment. A uniform product is obtained by correct processing, exact duplication of the correct production cycle, and elimination of the human element in operation, where practical.

A concrete example of incorrect heat application to a light gauge metal annealing problem, may serve to emphasize details of annealing furnace design to be avoided if good performance is to be obtained.

A Concrete Example

The installation to be discussed was operated by a firm manufacturing an article requiring successive drawing operations. Full muffle, pusher type,

double ended, oil fired furnaces were employed to perform the annealing process between drawing operations.

The product was loaded on heavy metal trays weighing two hundred pounds, ninety pounds of product being a tray load. These loaded trays were trucked to the entrance end of the furnace, the door was raised, and the loaded tray was injected into the oven by means of a steam operated pusher.

The following mechanical and thermal faults were evident in the handling of the product and the design of the furnace:

1—Excessive labor involved.

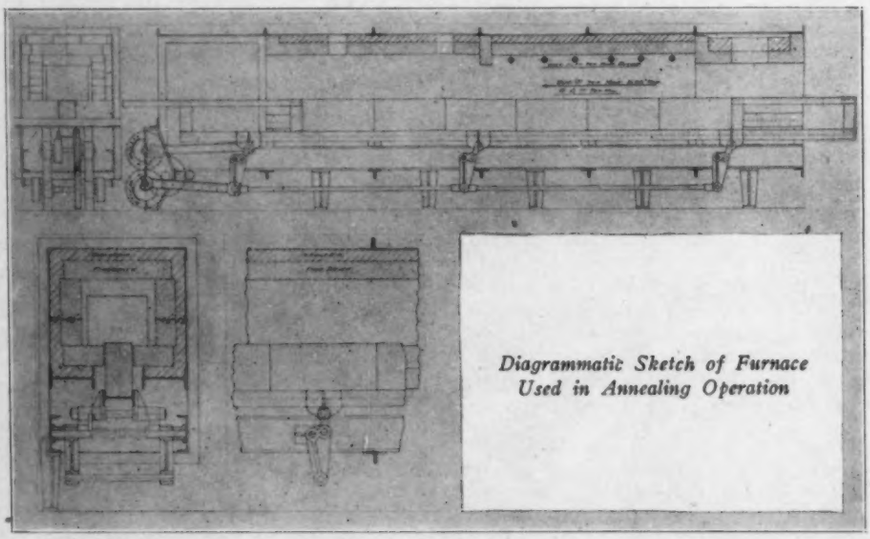
2—Product comprised only one-third of total weight of metal to be heated.

3—Excessive oven size due to work being fired inside a full muffle, necessitated by the impossibility of obtaining a neutral atmosphere by direct firing with the fuel used.

4—Excessive oven size meant excessive radiation heat losses, floor space occupied, and initial investment.

5—Full muffle firing meant loss in efficiency of heat transmission through the muffle and maintenance cost of muffle replacement.

6—Replacement of sixty loading trays @ $55.00 per year must be added to maintenance cost.



Diagrammatic Sketch of Furnace Used in Annealing Operation

Production Cycle Indicated Weaknesses

The production cycle followed in annealing the work also indicated inherent weaknesses. The temperature inside the muffle was supposed to be maintained at 1200° F. A loaded tray was held at this temperature for a soaking period ranging from nine to thirty minutes. A cold tray injected into the loading end of the oven, automatically discharged a hot tray from the rear of the oven. The dull red product was cooled in contact with air and scaled badly. This scale was loose and usually could be removed with a wire brush, but each piece had to be inspected and hard spots scraped by hand. Two men's time was employed in this inspection. A floor space of 100 ft. x 200 ft. was occupied by two furnaces, loading and unloading trucks, cooling space, inspection floor, etc.

Faults of Annealing Method

The glaring faults indicated by this method of annealing are:

1—Too low an annealing temperature carried in furnace. The correct annealing temperature for this particular metal was 1600° F. It could not be maintained because a hard scale formed on the product cooled in contact with air, which could only be removed by pickling in an acid solution before the next drawing operation could be performed.

2—Excessive soaking period required to draw the anneal down on the part of the article in contact with the heavy metal loading tray. Any delay in production which affected the supply of work to the loading end meant either leaving the charge in the furnace for a longer time or removing it manually. The charge was usually left in the furnace. This accounted for the range in soaking time of from nine to thirty minutes.

3—Excessive labor required in unloading furnace and inspection of product.

4—Unnecessary floor space occupied. Every square foot of factory floor space carries a definite portion of overhead chargeable to production cost.

A survey of this installation made by Industrial Gas Engineers of the Public Service Company of Northern Illinois, indicated that many of these faults could be eliminated by improved oven construction and correct application of heat.

How Faults Were Eliminated

A standard continuous oven application was considered and rejected. The heavy conveyor required would have weighed five times as much per lineal foot as the light gauge metal product carried. Therefore, five times the thermal capacity of the product would be absorbed by the conveyor during its travel through the furnace and dissipated on the return travel of the conveyor. Effort was then directed toward the design of a special self-contained furnace in which the weight of the product only absorbed heat from the furnace.

A walking beam type of furnace was evolved, which utilized an eccentric feeder bar for moving

the product through the furnace. A description of this furnace and the performance obtained will follow. We have used a line drawing to illustrate the design because it permits details to be shown which cannot be indicated by a photograph.

The Design of Furnace

This furnace was designed and constructed by the National Machine Works of Chicago, Illinois. Overall dimensions are length, 20 ft., 6 ins.; width, 3 ft.; height, 5 ft., ¾ ins. Wall construction, 4½ inches of fire brick, backed up with 2½ inches of insulation, and reinforced with 3/16 in. steel plate. The oven is divided into a short pre-heating zone, three feet long, a hot zone six feet long, and a cooling zone six feet long.

The eccentric feeder bar consists of an "I" beam built up with twelve inches of refractory. This eliminates metal contact through the combustion chamber. This feeder bar is supported by rocker arms having a double lever arrangement, pivoting on two rods connected to gear driven crank discs mounted at the drive end of the furnace. These drive gears are in mesh and rotate in opposite directions, giving the feeder bar a forward and upward movement on the drive stroke.

A point on the feeder bar follows a convex semi-elliptical arc on the feed stroke and a fairly flat arc on the return stroke. This produces a smooth forward movement of the work without jar or vibration which might have a tendency to distort the heated product. The work is lifted by the bar and advanced during the feed stroke. On the return stroke of the feeder bar, the work rests on adjacent refractory copings.

Working Parts Out of Contact With Heat

All working parts of the feeder bar mechanism are located below the furnace out of contact with the heat. No noticeable heat loss occurs through the ⅜ in. clearances between the feeder bar and the copings. Products of combustion are vented through adjustable flues located at each end of the furnace. These products of combustion are collected by a canopy or hood covering the furnace.

Work is fed from the press performing the initial drawing operation, by a gravity conveyor to the loading end of the furnace. The feeder bar picks up the work automatically from the end of the conveyor and starts it on the journey through the furnace. Products of combustion preheat the entering work, which continues through the hot zone where it is heated to 1600° F. During the travel through the cooling zone, the work is surrounded by products of combustion which form a slightly reducing atmosphere, free of corrosive elements.

At the discharge end of the furnace, the work is cooled below scaling temperature before it reaches contact with the air. The time which elapses during the travel of the work through the furnace is two and a half minutes. The work emerging from the oven is free from scale and perfectly annealed.

Delivering the Work

It is transferred by the feeder bar to a short gravity conveyor, which delivers it to an elevating conveyor. The elevating conveyor transfers the work to another gravity conveyor feeding the presses performing the second operation. Thus, all manual labor of handling work between drawing operations is eliminated.

The first draw on the article being fabricated is a deep draw requiring the use of a drawing compound. It was found that if articles were allowed to touch during the annealing process, that this drawing compound failed to burn off at the point of contact, which left a hard spot in the metal. The articles are now automatically spaced by simply lowering slightly the feeder end on walking beam. This causes the articles to travel over a slight hump and the resulting lag spaces the articles.

Two of these furnaces of different combustion chamber dimensions to fit two different sizes of work were installed. Both sizes of work can be fed through the larger combustion chamber, but the customer recognizes the poor economy of firing an oversize combustion chamber for small work, hence the reason for two units. These furnaces have been in continuous operation for three years without the expenditure of one cent for maintenance, and are in perfect working condition today. The two furnaces occupy space along one side of a room, leaving about 20,000 sq. ft. of floor space (occupied by the former installation) available for other purposes.

Performance Figures

Performance figures indicate an average gas consumption of 1,000 cu. ft. of 535 B.t.u. gas per ton of product annealed with negligible percentage of rejects. Figures taken from the customer's books indicate a saving of $12,000 per year in actual basic fuel cost in favor of gas over oil; a 100 per cent. increase in production capacity, and the elimination of twenty men from the payroll.

These figures are facts, not fancy. If the reader thinks the operation of the initial installation described is not typical, let him look around his territory and he will find parallel applications which are equally wild.

Since our first successful gas installation at this plant, the customer has installed gas-fired tinning furnaces and japanning ovens. The 20,000 gallon oil storage tanks now stand idle and the plant operates on one hundred per cent. gas.

Low Temperature Carbonization of Coal *

Description of carbonization process

A. G. Fieldner

GREENE-LAUCKS PROCESS.—Figure 4 is a diagrammatic view of the Greene-Laucks type of retort. It is described by Porter[8] as follows:

The Greene-Laucks process, developed first at Denver, Colorado, is now being tried out with Illinois coal screenings by a large coal mining company in that State. This process propels the coal upward on a worm conveyor in a vertical retort in which heat is applied both on the outside and within the hollow conveyor shaft. As the object in this case is to make a good solid fuel with recovery of tar oils, little attention is paid to gas yield, and 15 to 17 per cent of volatile matter is left in the coke. The retorts now operating with this process have been producing good strong semi-coke over long continued periods, at a rate of 24 tons of coal carbonized per retort per day. The fuel is readily ignited, burns smokelessly and holds the fire well.

The movement is assumed to be upward and the temperature of the heating flues graded from higher at the top to lower at the bottom. The shaft of the worm may be utilized either as an auxiliary heating flue or as an off-take for the gas and by-products. With such method of movement of coal on a conveyor, there may be but little mechanical interference with the agglomeration of the caking mass, and, in fact, small-sized coal or screenings may build up into marketable sizes of lump coal or semi-coke.

Horizontal Retorts

Stationary Retorts with Internal Stirrers. McIntire Retort.—The most recent type of the externally heated, internally stirred horizontal type of retort is that designed by C. V. McIntire, and now operated on an experimental basis by the Consolidation Coal Products Co., at Fairmont, West Virginia. This retort[9], shown in Figures 5 and 6, is a modification of the primary carbonization retort of the "Smith" or "Carbocoal" process installed at Clinchfield, Virginia. The original carbocoal retort was not practical because of breakage of the stirrer arms through resistance of the pasty, fused mass of coking coal, as well as other difficulties. The McIntire retort is reported to have solved this problem, and to have successfully carbonized coal from the Pittsburgh bed—a coking coal—for considerable periods at the rate of 50 tons per day. The semi-coke produced is not lumpy, but granular. It is, therefore, not suitable for domestic fuel without subsequent briquetting. However, it could probably be pulverized for powdered-fuel furnaces.

The retort is 16¼ feet long and 8½ feet in diameter. The lower part of the retort consists of V-shaped sections of resistant iron heated by burning gas in the space below. The upper part of the cylinder is removable and made of light boiler plate covered with sil-o-cel. The slack coal is charged continuously into one end of the retort and discharged at the other. The charge is agitated by a central oscillating shaft carrying arms with paddles. The gas is conducted out of the retort at the coal charging end.

With the coal heated to a maximum temperature of 450 degrees C. the following yields were obtained:

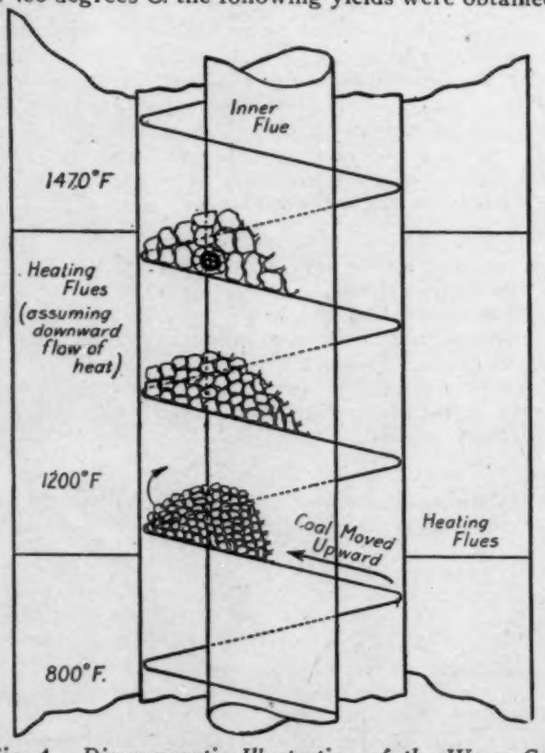


Fig. 4. Diagrammatic Illustration of the Worm-Conveyor Type of Low-Temperature Carbonizing Retort (Not Illustrating Any Particular Commercial Process)

Yields from McIntire Retort, per Ton of Coal Charged

Semi-coke (12-14 per cent volatile matter), %..	75

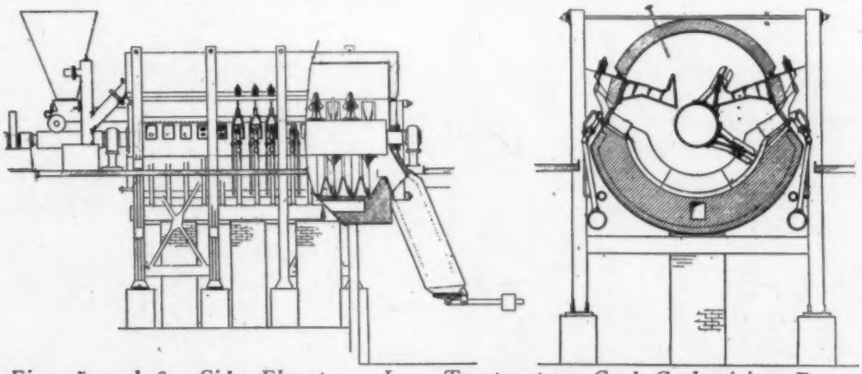
* Third installment of Mr. Fieldner's Paper, read before Johns Hopkins University.

[8] Porter, Horace C., Low-temperature coal carbonization and its prospective industrial development. Jour. of Franklin Inst., vol. 199, 1925, pp. 389-390.

[9] From Giant Power Survey Report of Pennsylvania, 1925, pp. 376-377.

Gas (875 B.t.u. per cu. ft.), cubic feet.. 2500 to 3500
Crude tar oils (1.080 sp. gr.), gallons.....23 to 30
Ammonium sulphate, pounds 10

The moving metal parts of the retort operate at a much more favorable temperature (450 deg. C.) than the Piron-Caracristi process, yet it is a question if the maintenance cost of this mechanism may not prove too high for profitable commercial operation. Continued large scale operation is required to answer this question.



Figs. 5 and 6. Side Elevator. Low Temperature Coal Carbonizing Retort. (Development of the Smith or Carbocoal Retort.) Consolidation Coal Products Company. Coverdale and Colpitts, Consulting Engineers; Charles V. McIntire, Engineer in Charge. Capacity as Operated at Fairmont, W. Va., in the Fall of 1924, 50 Tons of Coal Per 24 Hours. Externally Heated by Gas, Internally Agitated by Stirrer Arms, Continuously Fed and Discharged, Metal Heating Surfaces

Rotating Cylinders

German Investigations.—The total consumption of petroleum products (gasoline, kerosene, Diesel engine oil and lubricants) in Germany for the year 1922 was approximately 1,000,000 metric tons, but the total petroleum production of Germany for the same year was only 45,000 tons. Germany is, therefore, intensely interested in the production of petroleum substitutes from coal. German engineers have calculated that the low-temperature distillation of 34,000,000 tons of coal will provide 1,700,000 tons of low-temperature tar, which in turn will yield 1,000,000 tons of petroleum substitutes, the present yearly need of Germany. Central electric power stations, large industrial power plants and briquet works consume 63,000,000 tons of coal annually. It is, therefore, theoretically possible to provide the necessary quantity of petroleum substitutes for Germany's needs from the internal coal resources by extracting the tar oils from this coal before it is consumed for generation of power. I found German engineers keenly interested in this possibility, especially in connection with the burning of the low-temperature coke in pulverized form; indeed, this appears to me to be the most logical future field for low-temperature distillation.

Franz Fischer, director of the Kaiser Wilhelm Institute for Coal Research at Mulheim-Ruhr, began intensive experimentation on low-temperature distillation and the investigation of low-temperature tars early in the war period. He developed on a laboratory scale the small rotary retort which was subsequently built in full-size industrial units with various modifications by Thyssen, Fellner-Zeigler, Basmag-Meguin, and recently by the Mathias Stinnes Colliery at Essen. All of these retorts are externally heated and produce gas of high calorific value and a friable, voluminous semi-coke which can only be utilized by either briquetting with pitch or by pulverizing for powdered fuel. These installations have been in operation in an experimental way, some of them over periods of months. None of them are in continuous commercial operation at present, partly because economic conditions are not now favorable for financial returns on tar-oil and partly because of technical difficulties not completely solved. As stated before, the utilization of the semi-coke as pulverized fuel in such installations yet to be developed, and the commercial utilization of the low-temperature tar are the present goals of German research engineers.

Thyssen Retort.—Through the courtesy of Dr. Fischer I had the opportunity of seeing a Thyssen rotart retort[10] at the August Thyssen Works near Essen. It consists of a horizontally mounted steel cylinder 2.6 meters (8½ ft.) in diameter and 23 meters (75½ ft.) long (Figure 7). The charge of coal is carried through the retort by spiral ribs on the inner surface of the retort. The capacity is said to be 100 tons per 24 hours. Maximum temperature inside retort is 500 Degrees C. (932 degrees F.). Fuel consumption is 8 per cent of the coal carbonized. Judging from the samples of low-temperature coke displayed, the coals carbonized were non-caking. Fusing coals would stick on the walls of the retort, retard heat transmission and cause eventual failure of the steel by overheating.

Owing to the unusually high content of ethylene, propylene, propane and other easily condensable gases in the low-temperature gas, the Thyssen com-

[10]Stahl und Eisen, vol. 40, 1920, p. 743.

pany has installed a Linde liquefaction apparatus for the separate recovery of these constituents and the light oils.

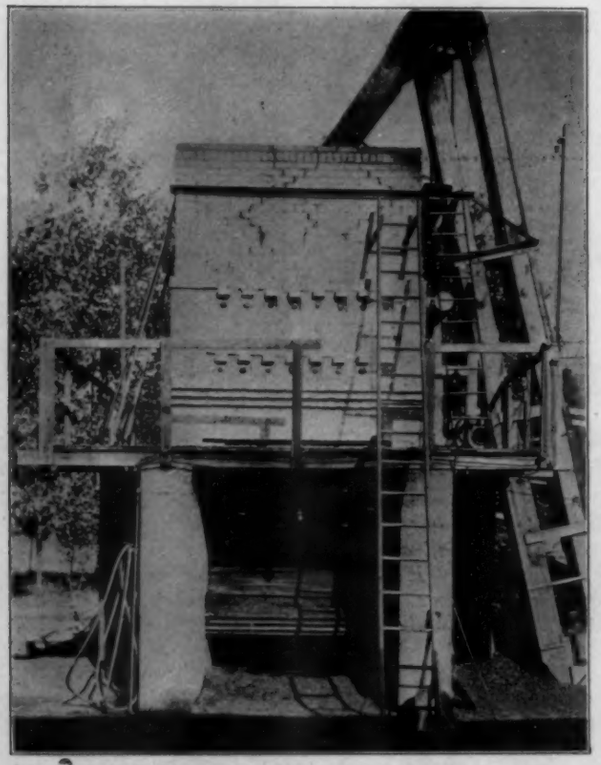


Fig. 7. Low-Temperature Carbonization Thyssen Double Rotary Retorts at Prince Bismark Colliery in Barr

The average gas analysis for a Ruhr non-coking coal is:

Constituent	Per Cent.
C_2H_4, etc.	8
C_2H_6, etc	15
CH_4	34
CO_2 (+H_2S)	10
CO	6
H_2	12
O_2	1
N_2	14
	100

The gross calorific value is 8,000 to 9,000 calories per cubic meter, or 910 to 1,030 B.t.u. per cubic foot.

A non-coking screened lump coal (small lumps) will pass through the retort with a fair yield of lump material in the semi-coke. A weakly coking coal comes through in a very porous, spongy mass. Strongly coking coal can not be put through the retort.

One of the big drawbacks of the rotary type retort is the dust created by the tumbling coal. Special dust separators are required to thrown down the dust from the hot gases before the tar begins to condense. Even with such dust-collecting equipment the tar is likely to contain from 1 to 2 per cent of dust. A high dust content detracts seriously from the market value of low-temperature pitch, especially when used for briquets.

The retort was not operating at the time of my visit, but it was said to have been operated continuously for a period of five months and appeared to be in good condition. I think the estimate of 100 tons throughout in 24 hours very optimistic; 50 tons seems to be a more reasonable estimate.

¤ ¤ ¤ ¤

NEW GAS FURNACE WORKS EASIER THAN ELECTRIC MOTOR

A gas furnace possessing all the control advantages of an electric motor has been developed by fuel engineers for a chair manufacturing concern in New England, according to the American Gas Association.

The gas industry has been working toward this end for some time, and has developed similar furnaces for other industries on a scale which, it is predicted, will effect economies in practically every manufacturing process in which heat is used.

In caning chairs, a continuous, uniform, but small amount of steam is required for softening the glue by which the strips of cane are attached to each other. As there was no equipment on the market which exactly met the requirements, the gas company was appealed to for help.

Gas engineers worked out a scheme by which a gas-fired steam boiler equipped with automatic water feed and a low water cut off was designed to do the work. It is reported that this installation works with even less trouble than an electric motor, because there are no switches and no oiling is necessary.

The total gas consumption of this system is said to be only $1.50 per day.

¤ ¤ ¤ ¤

An Attractive Store Display of Automatic Water Heaters

Research in the Range Industry

How the American Stove Co. tests and experiments with gas ranges

C. F. Farnham

THE use of manufactured and natural gas has been rapidly increasing from year to year. It can be attributed to the cleanliness, convenience, and better control of gas burning appliances over other heating appliances. The six Divisions of the American Stove Company are contributing many appliances that are used in conjunction with the extension of the uses of gas. Perhaps if it were investigated, it would be shown that the successful application of oven heat regulation (which was first conceived and given to the public by the American Stove Company) has greatly furthered the use of gas.

The Research Laboratory of the Company is located in St. Louis, Mo., and is housed in a handsome two-storied brick building, erected especially for studying research problems, and comprises at present 8,000 sq. ft. of floor space.

The Laboratory was conceived and built for the specific purpose of designing, developing, and testing of all kinds of (gaseous, or liquid) fuel burning appliances. It operates under the supervision of a staff of technical and highly trained experts.

Sections of Laboratory

The main sections of the Laboratory are:

1.—Executive Department.
2.—Designing Department.
3.—Pattern Department for making working patterns of models used in research problems.
4.—Fully equipped shop for building and developing experimental models.
5.—3,000 sq. ft. of floor space, devoted entirely to testing and experimenting.
6.—Complete chemical laboratory for analytical and other purposes.
7.—Fully equipped gas analysis department.
8.—A dark room and photographic equipment for taking photographs, developing negatives, and making prints.
9.—A special room containing a blue print machine and equipment for making blue prints of drawings made by the designing department of the Laboratory.

Laboratory Does Research and Testing

The Research Laboratory is fully equipped for conducting research and testing. It uses many special devices in developing appliances to perform in a perfect and efficient manner, when operated with different kinds of gas and used under the same conditions as in the home.

Some of the special devices used to solve the problems of the Research Laboratory are:

1.—Iodine-pentoxide apparatus; the recognized, highly accurate, and sensitive device for measuring very small, but poisonous, quantities of carbon monoxide.
2.—Primary-air measuring outfit for measuring the amount of air injected into burners. Very useful in properly designing burners and to determine that the assembled appliances will be efficient, safe, and durable.
3.—Specially constructed, unventilated room with a volume of 1,000 cubic feet. Used to study ventilation problems, and the effect on appliances, when operated in an atmosphere where the oxygen has been greatly reduced below normal air, such as occurs in a poorly ventilated room.
4.—Gas holders for storing or mixing different kinds of gas.
5.—Calorimeter for measuring the heating value of all kinds of manufactured or natural gas, and liquid fuels.

The Chemical Laboratory With a Chemist at Work on Research

6.—Highly accurate Bureau of Mines Type of gas analysis apparatus for determining the constituents in manufactured gas, natural gas, flue gases, and room atmosphere.
7.—Portable device, developed by the Research Laboratory, for measuring the quantity of air injected into a burner. Tests can be made while the appliance is in use in the home, or elsewhere.
8.—Specific gravity apparatus for determining the density of any gas.
9.—Seven test meters of various sizes so that the quantity of gas any appliance may consume can be measured.
10.—Gas compressor and equipment for producing any desired gas pressure.
11.—Air compressor and storage holder for making "forced tests" of appliances.
12.—Numerous gauges for measuring any gas pressure.

13.—Several sizes of regulators for controlling the rate of flow of gas and controlling any desired gas pressure.

14.—Recording pressure gauge for recording gas pressures.

15.—Recording thermometer for temperatures from 200° F. to 600° F., and used in studying oven heat regulation.

16.—Indicating electric pyrometer for measuring temperatures from 600° F. to 2,000° F.

17.—Full equipment for making fire hazard tests.

18.—Thermopile for measuring radiant heat from radiant heaters, or any other source.

19.—Special equipment for sampling products of combustion from all types of appliances.

20.—Barometer for measuring barometric pressure.

21.—Stop watches for timing purposes.

22.—Numerous mercury thermometers for making all kinds of temperature measurements up to 600° F.

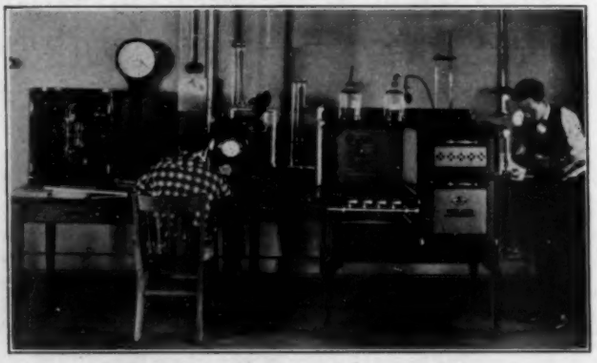
23.—Salt spraying apparatus for making corrosion studies of metals and metal coatings.

24.—Equipment to test the distribution of heat by cooking top burners. Most useful in developing burners that fry foods properly, when used with large utensils.

25.—Equipment for testing the efficiency of cooking top burners.

26.—Very sensitive balance, used in making quantitative analyses and other accurate weighing problems.

27.—Microscope, of the type used in metallography, for studying the structure of various materials and other magnifying problems.



Testing the Performance of the Range

28.—Hygrometer for determining the humidity of the atmosphere.

29.—Equipment developed by the Laboratory for measuring the acid and iron content in enamel pickling solutions.

30.—Hydrogen-ion concentration apparatus for measuring the acid strength of plating solutions, etc.

When appliances fail to give "good service," it is usually the result of improper designing, improper installation, or careless use. With the facilities and equipment, which are here enumerated, it is possible to solve most of the problems encountered in the design and manufacture of fuel burning appliances. Thus, faults can be discovered and corrected before models are manufactured for sale, so that the user will be assured of "good service."

A Reverie of Fifty Years*

A story of a gas man's long service

George S. Carlyle

FIFTY years ago I, a small boy, started to work for The Gas Light Company of Baltimore, then situated on South Street, as an office boy and messenger.

The Gas Light Company was one of two companies in Baltimore furnishing gas as an illuminant at that time, the city being divided into two parts, the western section being supplied by the People's Company, and the eastern section by The Gas Light Company of Baltimore.

Electricity Enters Field

Gas was used exclusively as an illuminant in Baltimore up to the year 1881 when the Brush Electric Light Company came into existence and installed what were generally known as arc lights in stores, hotels, streets and what few office buildings the City had at that time.

I have seen things grow in my fifty years of service, first gradually and then with leaps and bounds until the Company has reached its present large proportions.

Growth of Office

For instance, the office that I first went into on South Street had a total of about twenty-five clerks

* From Baltimore Gas & Electric News.

to perform the Company's work, all in one room on one floor. The Engineering and Superintendent's Department was on the second floor. We had no outlying stations or shops other than the gas plant at Spring Gardens.

Our meter supplies were kept on the top floor of the South Street Building. Meters required for customers were taken from this floor and placed in the residences where needed. Stock for pipe requirements was kept in the cellar of this same building and this pipe was used for meter connections and service introductions from the main. I suppose that probably there were fifty men, all told, engaged in that work. This description will give you some idea as to the development of the Company to the present time, taking into consideration that about seventy-five men performed the clerical work and the laboring work. Of course, this did not include the gas manufacturing at the works. Now compare this with the present organization—with its various shops, outlying stations, pay stations, etc., and you get an idea of the immense growth in fifty years.

I have performed duties in the various departments for the Company from office boy to the general office duties required therein up to the present position which I hold as Group Head of the Mailing Department.

Geo. S. Carlyle
Cons. Gas, Elec. Lt. & Power Co.
Baltimore, Md.

The Mailing Department

To give you some idea as to the growth of the Mailing Department I, as office boy, used to buy about 100 stamps per day—200 at the most. We probably used one-half or two-thirds of those every day for sending out general mail and notices to customers. All the stamping and sealing was done by hand. At the present time the average number of pieces of out-going mail is about 3,500; so you can see the extensive growth there.

Likewise in our Stationery Department—we have a very large room here now in the Lexington Building containing hundreds of stationery necessities and thousands of printed forms of all kinds and sizes. When I started with the Company I used to keep all stationery used, with the exception of possibly a couple of thousand envelopes, in a desk drawer, and it consisted of about a ream of foolscap paper, a ream of legal cap paper, a dozen pencils, a dozen pen holders, a dozen scratch pads, a box of pens, a quart of red and a quart of black ink, and a bottle of mucilage. This about let the stationery supply out.

In my early days gas was used almost exclusively for lighting purposes.

Gas appliances, as now generally used, were unknown.

When the Gas Range Was a Luxury

Gas ranges were a luxury and used by a very few people for the reason that in the first place, the stove or range was very expensive and likewise the gas which, if I remember correctly, was over $3.00 per thousand.

Domestic water heaters and industrial appliances as now used were unheard of, but of course, time brings changes of all kinds, of all things, to all persons.

I have seen many changes in my time of service both as to offices, executives, and methods of handling the Company's business which modern methods have of course reduced labor and costs both to the Company and to the consumer.

Modern Improvements

Telephones, typewriting machines, calculating machines and adding machines are all new inventions in the later years, none of which were used by the old original gas company. In fact, when they did gradually come on the market the management in charge was rather averse to taking hold of any of them even for a tryout up to a period in the middle nineties.

Then we had our first typewriter installed and lady typist to operate same, she being the first woman employed in the organization. The next acquisition was the Burroughs Adding Machine and of course a number of various kinds of machines have been added up to this time which facilitate the Company's work very materially.

My associations both with the management and its officers generally, likewise the personnel, have been very agreeable and I have always tried to do my duty as I saw it and will continue to do so to the best of my ability.

☼ ☼ ☼ ☼

COKE AND TAR FROM COAL

Coke and tar are manufactured from coal by a method which consists in subjecting mineral coal in the form of a continuously downwardly travelling column in counter-current to the action of gases free from oxygen at a rate of at least 80-96 cubic feet of gas per pound of mineral coal and at a temperature of the gas of about 500° C. This process is patented in the U. S. patent No. 1,578,376.

Selling Automatic Gas Appliances

Folks nowadays are desirous of labor saving devices

J. B. Dillon

DURING the recent baking contest held by the Public Service Company of Colorado at its Denver headquarters, we saw an automatic this and that installed, an attendant alongside who not only knew how to explain its features, but did it in a manner which seemed to say: "Folks, I cannot help loving this piece of machinery; it is so handy, so practical. Step right up and enjoy the game with me." And the ladies crowded as close as they could get and all were enthused. Many said:

"Oh, why didn't I see that before I bought my gas heater."

"How long have you had it?"

"Oh, many years!"

"We did not have this automatic storage water heater at that time, but you can get quite a substantial allowance for the old one as first payment on one of these, should you decide to take one."

"Do you mean that? If so, you have made a sale right now."

And thus it went on on the various automatic appliances shown.

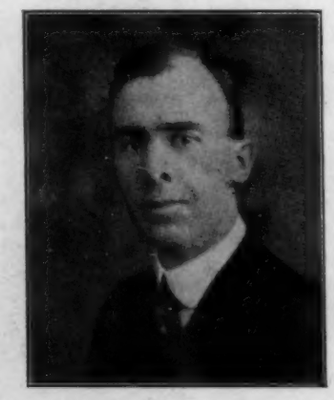
Two of the most enthused, among the men folks, were C. A. Bigler, superintendent of the Domestic Gas division, and Roy G. Munroe, manager of New Business Division, and at the first opportunity the writer discussed the affair with these gentlemen and each gave credit to the various departments for the co-operative effort that permeates the working of the company, as a whole, but the following facts were brought out.

C. A. Bigler
Supt. Domestic Gas. Div.

How It Was Done

The new business department was instituted by Henry L. Doherty twenty-six years ago. Today, Denver ranks nearly first among the cities of the world, with miles of parallel gas and electric distribution per capita, number of customers per mile of main and number of customers per 1,000 population. Denver is not a strictly industrial city, its population being about 300,000, yet it occupies an area equal to that of Cleveland or St. Louis, and there are 151,800 customers, gas and electric considered separately.

The number of gas water heaters and the number of gas ranges which have been sold in Denver each exceed the present number of gas customers; therefore it is not considered good business in this city to devote too much effort to the manually operated water heaters and gas ranges, but rather to give the folks something which they will like better, and that is the automatic appliances.



Roy G. Munroe
Manager, New Business Div. Public Service Co. of Colorado

The Interview Continued

"You don't mean that you have quit trying to place the latest patterns of the manually operated types?"

"Oh, no, and, as for proof, we point out that our territory representatives are still pushing the types you mention, and they have sold a manually operated gas range and water heater, one to every eleven domestic gas meters during the year ended, but such sales represent orders taken while we were soliciting customers for automatic storage water heaters, automatic house heating equipment, automatic ranges, room heaters, clothes dryers, laundry stoves, incinerators and three-part rate or additional consumption orders."

"It seems to me that I often see your newspaper advertisements and your show windows carrying sales ideas for the manually operated types?"

House-to-House Canvassing

"Yes, and our policy is to use those two mediums and our floor space in our main sales room to continue the sale of these useful appliances, but our house-to-house canvassers devote their time to boosting the automatic; yet any of them are glad to serve the customer with the manually operated type or to recommend them, for you well know that any first-class gas appliance is the best article there is where heat and quick, satisfying results are required."

(Continued on page 436)

It Is Baked With Gas

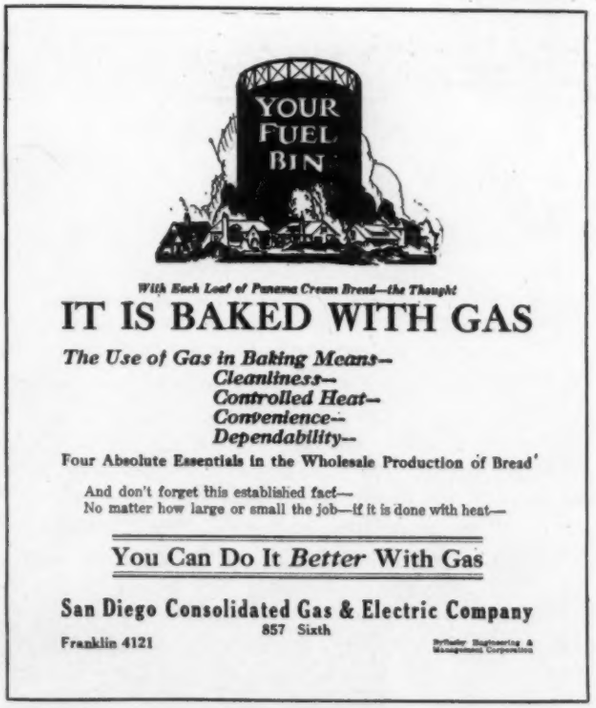
A large bakery assigns efficiency of bakery to gaseous fuel

W. B. Stoddard

THE San Diego Consolidated Gas and Electric Co., San Diego, Calif., linked up very effectively with the formal opening of the $350,000 addition of the Southern California Baking Co. The public opening took place on April 9th and the company used a double-page spread to announce the housewarming, with music, refreshments, etc. In the same issue the Gas Company ran a big ad headed with a gas tank, which they called "Your fuel bin." They advertised that the big ovens were heated with gas and concluded: "And don't forget this established fact—no matter how large or how small the job, if it is done with heat—You Can Do It Better with Gas."

Efficiency Due to Gas

As the old-fashioned wood cook stove of our grandmothers has been replaced by the efficient gas range, so has the inefficient wood fired bake oven been replaced by huge traveling gas fired ovens in the wholesale production of bread. The plant of the Southern California Baking Co. has undergone this revolution, and on Friday, April 9th, they showed to hundreds of interested spectators how they produced 1,500 loaves of bread an hour, attributing this remarkable efficiency to the use of gas as a fuel. The operation of this big oven can be likened to an endless chain motion. The pans of dough are placed on movable platforms at one end of the oven and from 35 to 40 minutes later are removed at the other end, a full sized loaf of bread. Starting in 1894 with a crude bake oven using wood as a fuel, which would bake 150 loaves an hour, they later substituted oil for a fuel, increasing the loaves to 300 an hour, which is now increased five-fold by the use of gas traveling ovens.


YOUR
FUEL
BIN
With Each Loaf of Panama Cream Bread—the Thought
IT IS BAKED WITH GAS
The Use of Gas in Baking Means—
Cleanliness—
Controlled Heat—
Convenience—
Dependability—
Four Absolute Essentials in the Wholesale Production of Bread
And don't forget this established fact—
No matter how large or small the job—if it is done with heat—
You Can Do It Better With Gas
San Diego Consolidated Gas & Electric Company
857 Sixth
Franklin 4121

When operating at full capacity the big oven requires approximately 1,600 cubic feet of gas per hour, or nearly as much as is used by the average residential customer in a month. From the standpoint of cleanliness, temperature control, convenience and dependability the large gas fired oven is the last word in baking efficiency.

INDUSTRIAL GAS SALESMAN'S HAND BOOK

THIS is the title of a little booklet which has been compiled by the Industrial Gas Sales Promotion Committee of the New Jersey Gas Association. The purpose of this hand book, as stated in the foreword, is to assist those companies who do not have Industrial Gas Departments to obtain industrial gas business in their community. The booklet consists of a brief review of the various competitive fuels and gives the advantages of gas over oil and coal. It then contains a list of the more important industrial operations in which gas is used, these operations being classed under various main industries such as metal working, jewelry manufacture, chemical plants, etc. Under each operation there are given a series of numbers which refer to a list of manufacturers of industrial gas appliances, which is given in the back of the book. There are fifty firms mentioned in this list.

HEATING BALTIMORE HOMES WITH GAS

THE Industrial Fuel Department of the Consolidated Gas, Electric Light & Power Co. of Baltimore, has issued a booklet relating to the results obtained in the heating of houses in Baltimore with gaseous fuels. This booklet consists of statements taken from a number of letters which have been sent to the gas company by customers who use gas for house heating purposes. Invariably the comments are favorable. They show that gas house heating has taken a strong hold in the Baltimore community and the people are pleased with it and are willing to spend a little more money for house heating in order to get the advantages and benefits from gaseous fuel. It is said that there are now 1,300 Baltimore buildings heated by gas fired boilers.

As The Journal Views It

ALL IN THE DAY'S WORK

From time to time, at meetings of gas associations and at other public gatherings, certain gas men have been selected for receiving medals and other rewards for bravery in rescuing individuals from danger. Those men, who have been so rewarded, all showed remarkable bravery in exposing themselves to danger to save lives. They well deserved the approbation of the industry and of the public at large.

But after all, they are but a small percentage of the total number of workers in the gas industry, and we may say, in the public utility industry as well. Their fellow associates and co-workers go about their tasks, performing their various duties each and every day—the paramount one being to keep the community constantly and adequately supplied with gas, and electricity, served with transportation and the like. It is a fact, however, that these duties are not common ones in any sense of the word, and are not of the same simple, safe and secure nature as the work that is demanded from others in most industries.

As Philip H. Gadsden, vice-president of the United Gas Improvement Company of Philadelphia, has remarked, every hour of the day and night employes of America's public utility companies are fighting a never-ending war against flood, fire and storm, to maintain continuous service.

He has said further, that "from the very moment a man enters into the public utility service the fact is impressed upon him that under no circumstances must the service fail; no excuse can be accepted; so that when his time comes to keep the gas flowing through the town that its inhabitants may be fed, or to repair a telephone that communication may be maintained to a stricken city, or to restore electric light or power service that the community may be lighted and its industries revived, all of the instincts of his nature which have been strengthened and stimulated by the traditions of the service and by the association with his fellow employes, urge him on, even at the risk of his own life."

This neatly defines the real duty of the public service employe. He accepts danger as something that is "all in the day's work." His service is truly heroic for on him depends the welfare and well-being of an entire community and if he fails, and if gas stops flowing in the mains, cars stop running and telephones cease ringing, not only the convenience and comfort, but the safety of the community is in danger. The public service employee must always be ready to meet emergencies and to exert every effort, even going into extraordinary danger, to keep that service from failing.

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GAS AND HEALTH

The advantages of gas as a domestic fuel have been discussed from many different standpoints. The comfort and convenience and efficiency of the gas range have been talked about many times. Much attention has been paid to the tendency of Americans to eat their meals away from home. The work done by the "Own Your Own Home" movement, has been of considerable importance in getting people back into the home, and in promoting home life. Gas has been pointed out at times, as being a most potent agency in furthering home life and in protecting the home, for by its use, many of the inconveniences and difficulties of running a household, have been removed, and an easy running house connotes a happy home.

There is, however, still another side to the use of gas in the modern kitchen. There is the question of health. There is no doubt that home cooking and home meals are conducive to health. Restaurant cooking may be perfectly sanitary and then again, it may not be, and those who travel from one restaurant to another, soon find that the differently cooked foods have a deleterious effect on their digestion and health.

Home-cooked foods are the best foods after all. They may not be as elaborate, perhaps, as restaurant foods, but the quality of the ingredients that are used in preparing them is known. The gas range has helped materially in making it possible for even inexperienced cooks to obtain good results in home cooking. Its use makes it certain for the home dweller always to have wholesome, well-cooked foods of whose quality he is assured. There can be no question but that this has had a most beneficial effect on his well-being and on his general health, and it is to the credit of gas that it can be designated as a health-promoting medium.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 119

Combustion

Gas and Coking Coals

Coals that are used for the manufacture of metallurgical coke in the by-product oven, or the manufacture of gas, must possess certain essential characteristics. These coals are known as gas coals. They soften upon heating, evolve volatile matter, and finally, solidify into a solid cake which leaves a porous cellular mass on further melting. It is a fact, that while varieties of these coals are used for gas making and coke making, nevertheless, it is not necessarily true that the coal which is best suited for the production of manufactured gas will give the best grade of metallurgical coke. However, the two operations, that is the making of gas and coke, are often carried out simultaneously.

It has been mentioned above that the two main characteristics of this particular type of bituminous coal is its high volatile matter content and its ability to cake on heating and leave behind, after its volatile ingredients have been driven out, a hard, porous mass known as coke. In our study of coals it has already been brought out that the chemical analysis of a coal does not give any exact indication of its coking or caking properties. In fact, there has been considerable contention regarding the accuracy of various methods of analysis and testing for establishing the coking qualities of a coal. Thus, for example, the ratio of hydrogen to oxygen has been suggested as being a valuable indicator of the suitability of the coal for carbonization purposes.

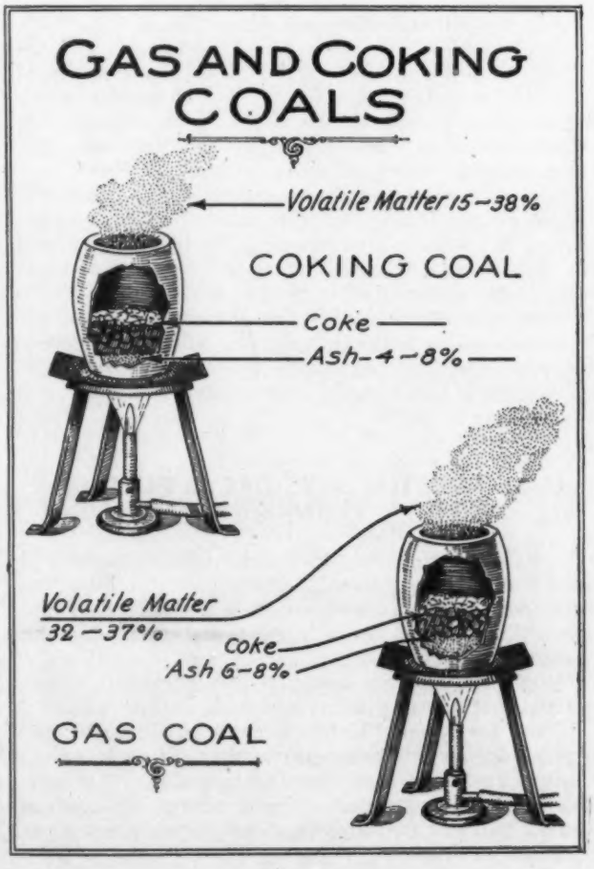
Coals, to be suitable for coke making and gas manufacturing purposes, should be able to meet the following conditions:

Constituents	Coals for By-Product Coking, Per Cent.	Coals for Gas Making, Per Cent.
Volatile matter..	15 — 38	32 — 37
Ash	4 — 8	6 — 8
Sulphur	Not more than 1.5	Not more than 1.25
Phosphorus	Not more than 0.02	
Gas yield	.....	10,000-12,000 cu. ft. per ton
Coke yield	.....	65 — 70

Discussion of Table

In this table will be seen that there is considerable more latitude in the percentage of volatile matter, for a coal that is designed particularly for coke making by the by-product process, than for a coal that is to be used in the carbonization process for the manufacture of gas. This is understandable in that the volatile ingredients of the coal form a principal portion of the gas derived from the solid fuel.

Another interesting feature is the percentage of sulphur and in this connection, the amount of sulphur in coal used for gas purposes, must be as small as possible for the more sulphur there is in the coal, the more difficulty will be found in purifying the gas manufactured from it.



Carbonization Test

While some analytical methods may give fairly correct ideas on the coking quality of a coal, nevertheless, it remains that the only accurate method is to make an actual coking test of the coal in the laboratory. This is a method that will not give absolutely true results for it is not possible to simulate in the laboratory apparatus the conditions that apply to large scale operations. The results are nevertheless fairly satisfactory and show just how much coke and what kind of coke can be obtained from the carbonization of a particular sample of coal.

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SELLING AUTOMATIC GAS APPLIANCES

(Continued from page 432)

"Yes, I will certify to that, but what is the reason for making the house-to-house canvass when you know where your gas customers live and might merely rely upon mail order routine?"

"The parties are right at home. They know their premises, its requirements; they know just what the old style types can do and when we explain the difference right there, sales are made."

"Do you folks keep eternally after sales?"

Always Keeping After Sales

"Oh, yes, the moment a business concern shows any lax of enthusiasm in its own business that's the moment the customer is going to relax in his or her desire to trade with the man that does not appreciate the merit of his own business!"

Messrs. Bigler and Munroe are young men with old heads and from what they state herein the conclusion is plain. Know your goods, like your goods and in a pleasant and consistent manner canvass your goods and you will sell that which is good. To do otherwise is like looking at a flapper's purse. It is pretty and there is room for lots of things therein, but what's in it? She must either show or tell, or all we get is the outside appearance.

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U. S. INVESTOR SAYS GAS IS FUEL OF FUTURE

Manufactured gas is to be the industrial fuel of the future, and in twenty years gas will have replaced oil in the factories and work places of the country, according to a recent statement by the United States Investor.

"With the growing scarcity and increasing prices of coal and oil, gas becomes more readily salable," says the Investor. "Not only that, but it represents a great saving in labor because there is no handling charge, and it is more easily controlled. There is less wastage with gas. Some recent installation figures find gas furnaces have produced a seven per cent fuel saving.

"The whole subject of industrial gas service opens up possibilities that can only be guessed at now. Even if the gas utilities were to lie down on the job, and they are not going to do that, the manufacturers of gas appliances are going to push the service forward.

"Wherever oil is now being used, gas can be used more economically with modern burners. Gas will replace oil in another twenty years."

The consumption of industrial gas has increased at the rate of nearly one hundred per cent a year during the past decade, and it is now estimated that one-fourth of the all the gas produced is consumed for industrial heating processes. New York, the leading user of gas among the States, in 1925 produced one hundred billion cubic feet, of which twenty-five billion furnished fuel to the State's industries.

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Time to Do Up Curtains Again?

"The *washing* of curtains isn't so hard, but I always dread the *ironing*—I can't seem to get them straight," said a woman to whom we demonstrated the gas ironer the other day.

Then we showed her how easy it was to smooth out the curtains between the long rolls of the ironer, and how even and straight they came out. Let us give you a demonstration of the

Gas Ironer

Lighten your work at housecleaning time! Washing and ironing is always its heaviest then. A down payment of

$0.00

puts the ironer to work in your home.

Call ..... today.

(Your Name and Address)

A.G.A.-562

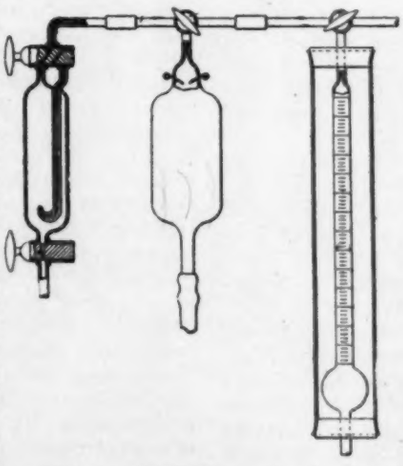
The Spring Cleaning Appeal

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

GAS ANALYSIS APPARATUS

THE apparatus comprises (as will be seen from the accompanying diagram) a burette, an intermediate vessel, and a pipette; the latter being arranged so that it can be charged or refilled with absorbent without detachment from other parts of the apparatus. The gas is caused to rise through the absorbent in a fine stream of bubbles, so as to be brought into intimate contact therewith.

The burette is a customary graduate gas burette, fitted at the top with a three-way capillary stop-cock. Of the two available leads to the latter, one communicates with the source of gas to be analyzed, and the other with a similar three-way stop-cock at the top of the intermediate vessel. The latter is connected at its base to a movable mercury reservoir, and is fitted near the top with two platinum electrodes, so disposed that the explosion of the contents of the vessel can be effected. The remaining lead to the stop-cock of the intermediate vessel is connected to a tube which passes to a stop-cock at the head of the pipette, bored in such a way that entrance to, or exit from, the pipette may be made by one of two channels; the first connecting the cock to the top of the vessel, and the second conveying the gas to a tube passing through the neck of the pipette and extending nearly to the bottom thereof—its lower end terminating in a jet bent to eject the gas upwards. The bottom of the pipette is furnished with a tube through which the absorbent solution can be drawn into, or discharged from, the pipette.



The pressure within the apparatus is increased or decreased by raising or lowering the mercury reservoir of the intermediate vessel, thereby enabling gas or absorbent solution to be drawn in or ejected. For the purposes of analysis the gas is drawn into the burette in the usual way, and its volume read. The taps are then manipulated so that, while the burette is isolated from the rest of the apparatus, the intermediate vessel and the pipette are placed in communication. The lower lead-in tube of the pipette is then immersed in the appropriate absorbent solution, and the intermediate vessel evacuated until the pipette is completely filled with absorbent. The taps are then adjusted to isolate the intermediate vessel, and the gas in the burette is transferred to the pipette. Following absorption the treated gas passes into the burette, where its volume is again measured. By further manipulation of the taps and by compressing the air in the intermediate vessel, the absorbent solution in the pipette may be ejected and replaced by a new solution, when the procedure described may be repeated, and the gas subjected to further absorption. Alternately, a volume of oxygen may be sucked into the burette, and the mixture driven into the intermediate vessel, exploded, and returned to the burette, where any substance formed by the explosion may be measured by carrying out suitable absorptions as previously described. (British Patent No. 246665.)

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A RECORDING GAS CALORIMETER OF THE FLOW TYPE

THE outstanding need of the gas industry is a recording calorimeter which will give at once, as the manufactured gas leaves the retorts or generators, its calorific value, instead of waiting till the gas holder is full and the distribution of it from the works to the far edge of town brings in a report from the housewife that the gas is so poor it will not burn. It is then too late to remedy the defect. The instrument here proposed is of the flow type, doing its own metering and automatically controlling the temperature and pressure of the water and gas passing through the apparatus. The burner is of the ordinary Bunsen type, and its heat is imparted to an equivalent volume of water. Under the conditions of control therefore, as to temperature and pressure, a single constant for the instrument is obtained which can be applied directly to the differential thermometric readings and thus transferred to a recording instrument of standard type. (Paper presented at Tulsa meeting of the American Chemical Society.)

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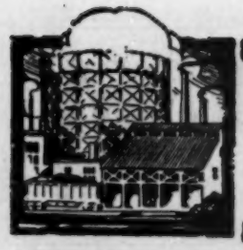
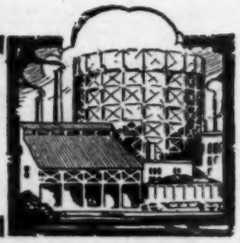
IGNITION TEMPERATURE AND RE-ACTIVITY OF COKING PRODUCTS

IN an article published in Zeitschrift f. angw. Ch. volume 39, pages 132 to 138, there was discussed the relations that exist between the ignition temperature and the re-activity of various products obtained in the coking of coal. The re-activity is determined by reducing action of the coking product of carbon dioxide when the temperature is gradually increased while the rate at which the stream of carbon dioxide gas flows through the coke is maintained constant. In case the coke is irregular in composition, different pieces are selected and two different sharply defined ignition temperatures are obtained.



NEWS OF THE GAS INDUSTRY



New England Commercial Men Meet

Gas Sales Division of the New England Gas Association Holds Annual Meeting

The annual meeting of the Gas Sales Division of the New England Gas Association was held at the Boston City Club on Friday, May 7, 1926, with 180 guests and members present.

The reports of the various committees proved to be interesting and brought out the growth of the association during the past few years. Music was furnished by the Knickerbocker Four Ladies' Orchestra and solos by B. E. Cass and L. A. W. Merrihew, members of the association.

The first committee to report was that of the nominating committee, who brought in the name of M. B. Webber for governor of the association, and the names of H. B. Hall of the Old Colony Gas Company, Jesse Johnson of the Providence Gas Light Company and S. D. Palmer of the Welsbach Company for members of the board of managers. On vote of the association the above men were elected to the offices and amid much applause M. B. Webber was conducted to the head table, where he stated that he was very glad to be elected governor and that he would endeavor to carry on the work of the association in the same manner as has been done in the previous years.

Report of Secretary-Treasurer

The report of the secretary-treasurer, J. H. Sumner, showed a very healthy balance of money on hand and an increase in the membership. A year ago there were 170 members on the association's books; forty-nine members were received during the year, making a total of 221 members. From this number there were seventeen withdrawn, making the total membership today of 204 members. It is interesting to note that the majority of the members who withdrew either moved to another section of the country or left the gas industry. The average per cent. of members attending the meetings during the year was 69½ per cent., a very good showing.

The association, through William Gould, presented the retiring governor, J. J. Quinn, with a gold fountain pen and pencil inscribed "Presented to J. J. Quinn by the Gas Sales Association of New England, 1926." Mr. Quinn responded, stating that he was very glad to be able to serve the association during the past two years and that he made many new friends while he was governor of the association.

Before introducing the speakers of the evening, Governor Quinn called attention to the sales conference to be held at Gloucester on June 11 and 12th under the auspices of the American Gas Association. He stated that the Gas Sales Association were behind this movement and he urged all the members to do all they could to have their companies represented at this conference.

Attention was also called to the Industrial Gas Course at the Massachusetts Institute of Technology from June 14th to the 25th. Those who have attended these classes in the past years have received considerable benefit.

A Message From Mr. Freeman

Fred Freeman brought greetings from the New England Gas Association. As president of this association, Mr. Freeman outlined the plans and policies, stating "that there is no need to make gas unless the people have use for it. We do not sell gas, but we do sell the application of gas and what it will do in the household." Don't look at your job as the selling of so many cubic feet of gas, but on the service which gas does. Look at it from the improvement of the quality of the goods that the use of gas can make or the reduction of the cost for the same quality of goods, which would not be capable of being produced unless gas was used. You men who are out in the front in my opinion have an important job. Your job of selling is not standardized. It depends largely upon personality. The growth of the gas business is in your hands."

Refrigeration

Mr. Quinn then introduced one of the speakers of the evening, Nils T. Sellman, manager of the Utilization Department of the Consolidated Gas Company of New York. Mr. Sellman stated that the possibilities in the industrial departments of gas companies offered wonderful opportunities for increasing the gas output. He referred to several new developments which had taken place in surface combustion.

Regarding gas refrigerating machines, Mr. Sellman said, "The earliest attempts in gas refrigeration were commercial machines. In New York three or four installations were made and very serious difficulties were encountered in the operation of these machines. Since the early developments, the domestic refrigeration has been given serious consideration. The machine which we are investigating in New York is of the intermittent absorption type. It has a rating of about fifty pounds of ice melting effect per day. The electric industry is selling over 400,000 machines. If we could get the same business it would add six billion cubic feet to our output."

The next speaker was Charles A. Wier of the National Shawmut Bank of Boston. Mr. Wier outlined the different types of men in the business world and the methods in dealing with other people. His talk dealt with the human side of business and brought out many important points of character in famous men of this country.

Gas Men Discuss Insulation

May Meeting Industrial Gas Division N. E. Gas Association Held in Boston

The subject discussed at this meeting of the Industrial Gas Association Division of the New England Gas Association was insulation, and the speaker was Professor Gordon B. Wilkes, associate professor of Industrial Physics at Massachusetts Institute of Technology. Before President E. L. Woods presented Prof. Wilkes to the audience a short business meeting was held.

In reporting for the boiler code committee, J. J. Winn stated that marked interest had been shown by the manufacturers of gas fired boilers in this effort to arrive at some standard code of gas boilers. He also stated that Herbert A. Sullivan, who is drawing up a code for oil burners is also cooperating and showing a real interest.

Industrial Gas Course

J. W. Howard reported as follows in regard to the Industrial Gas Course to be held at M. I. T. from June 14th to 25th this year. The course, he said, has been changed and improved. The lecture on report writing has been expanded. Two lectures will be given on house heating and Clifford Paige, vice-president of the Brooklyn Union Gas Company and who is considered the real father of the course, will give a talk at the banquet to be held June 25th. The suggestions from those who attended the course last year have been followed in so far as practical and the lectures this year will be mimeographed, so that the students will not have to spend any time taking notes but can give their undivided attention to the lecturer.

John J. McKearin, sales manager, Haverhill Gas Light Co., was voted in as a new member.

President Woods appointed J. H. Sumner of the Cambridge Gas Light Co., S. A. Mace of the Lynn Gas and Electric Co., and R. B. Smith of the Gardner Gas Fuel and Light Company as a nominating comimttee, and John J. Quinn, vice-president of the Quincy Gas Light Co., and H. B. Hall of the Old Colony Gas Company as an auditing committee. It was announced that the next meeting will be held on Friday, June 25, 1926, at the Riverbank Hotel in Cambridge, and that C. E. Paige, vice-president of the Brooklyn Union Gas Co., will be one of the speakers.

Insulation an Important Matter

In opening his talk, Professor Wilkes said that the gas man should be interested in all types of insulation, because gas is now being used all the way from refrigeration to the heat treatment of metals. Insulation may be needed, he went on, for any one or a combination of reasons. The first reason that comes to mind, of course, is the saving of the heat. In the days of fairly cheap coal insulation was slow in being adopted. As gas began to be used insulation became more important because of the relatively higher price of gas and the greater saving that would result from insulation. With electricity insulation became a necessity. On account of the high cost of generating heat by electricity the successful application of electric heat depends very largely upon the effectiveness of the insulation.

Gas appliances should be insulated. In nearly every case too little insulation is used. The saving of fifty per cent. on the wall heat losses, however, does not mean that saving on the total consumption of gas for the heat absorption of the load placed in the furnace has to be considered.

Another reason for using insulation is to secure better distribution of temperature. The temperature of a given space is always more uniform when insulation is used. This uniformity of temperature is often an important factor.

Comfort of the operator is another reason for using insulation. Sometimes insulation is very essential for this purpose alone. Insulation helps in making working conditions much more comfortable than they would be without the insulation.

For such purposes as storage heaters and fireless cookers, insulation is needed to keep in heat. It is also needed for the same purpose when we have to use high temperatures. In a well insulated but crude furnace it has been possible to reach temperatures as high as 3350 degrees Fahrenheit in the laboratory by using just gas and air and no pre-heating. Without the insulation it would not be possible to reach any such temperatures. The same principle holds true in the case of refrigeration. The lowest temperatures are secured through the use of good insulation.

Three General Types

Professor Wilkes divided insulation into three general types, low temperature, steam temperature and high temperature.

Low temperatures he called up to 212 degrees Fahrenheit. This is the temperature range for which organic materials may be used. The best possible insulation for this temperature range is the sort used in a thermos bottle, that is, two polished surfaces with the air between exhausted. This method, however, cannot be used conveniently in very large sizes and it is of no value for high temperatures where the heat losses are by radiation.

There are rigid and non-rigid insulating material. Any light, fluffy material is usually a good insulator. Good insulating material at this low temperature is made out of various kinds of organic and inorganic fibres.

Of rigid insulating material cork is the best known and the most used for these temperatures. It is effective and strong enough. The walls of small refrigerator rooms are now being made entirely of cork. Cellotex, which is formed from Bagasse, a by-product of the cane sugar industry, is made into boards. This is not used to any great extent at present in cold storage, but is used for insulating houses. In this connection, Prof. Wilkes said, that though wall insulation was needed, the greatest heat loss in a house was through the doors and windows.

The insulating results from mineral wool vary with the

method of manufacturing and of packing. Cement is not a good insulator. Blocks are better than cement.

At temperatures above 750 degrees the effectiveness of insulating material falls off very rapidly. Infusorial earth is often used, but in practice rigid insulators are usually best. Insulating bricks have a value of 15 up to 1600 degrees, 50 at 2200 and above 2200 fire brick, which is the only material that can be used, is 150. This shows how rapidly the effectiveness of insulation falls off as the temperature goes up. If a wall is built with an inner course of fire brick, then a core of crushed fire brick and an outer wall of suitable material, a very good effect is obtained.

In general the lighter the material the better it insulates. Concrete is not as good an insulator as fire brick. Four inches of concrete is not of much value from an insulating point of view. If an insulating base is needed for a gas appliance it would be better to put down a layer of hollow tile and then a coating of concrete on top to give a finish. The ends of the tile should be left open to permit of air circulation.

Following the talk of Prof. Wilkes, Mr. Kingsland of the Minneapolis Heat Regulator Co., presented some data which tended to show that the time clock on a thermostat resulted in a worthwhile saving of gas in gas heating. The data was compiled by the Armstrong Cork Co.

Third Regional Sales Conference at Lake Mohonk

The Third Regional Sales Conference of the New York and New Jersey Regions will be held this year on June 3rd to 5th inclusive at the Lake Mohonk Mountain House, Mohonk Lake, New York.

It will be recalled that the conference was held at the same place last year, and those who attended have attested that that was one of the best commercial meetings ever held by the gas industry. It is hoped that this year an even greater gathering will assemble than last year.

Thursday, June 3—9:30 A. M.

Opening Remarks—"The New York Regional Council and Its Aims," G. M. Karshner, Assistant General Commercial Manager, Consolidated Gas Company of New York.

Address of Welcome—T. R. Beal, President, Central Hudson System of Gas and Electric Companies.

"What's Ahead in the Industry?"—Alexander Forward, Secretary-Manager, American Gas Association.

"Selling, from a Public Utility Standpoint" — Oscar H. Fogg, Vice-President, Consolidated Gas Company of New York.

"Getting and Keeping the Domestic Load"—A. Gordon King, Service Engineer, American Gas Association.

"Selling by Mail"—John Howie Wright, Editor, Postage Magazine.

Friday, June 4—9:30 A. M.

"Windows — Your Greatest Salesman" — Carl Percy, President, Carl Percy, Inc.

"Insulation of Homes — Our Opportunity"—Speaker to be selected.

"Present-Day Opportunities for Gas Sales"—J. R. Jennings, Managing Editor, Gas Age-Record.

"Home Service"—Maye Lovell, Home Service Director, Consolidated Gas Company of New York.

"Co-operation Between Gas Companies and Appliance Manufacturers"—W. E. Derwent, Chairman, Manufacturers' Section, American Gas Association.

"Some Phases of House Heating Sales"—H. Leigh Whitelaw, Chairman, House Heating Committee, American Gas Association.

Saturday, June 5—9:30 A. M.

"Improving Goods by Creating Consumer Demand for Quality"—Bennett Chapple, Director of Publicity, American Rolling Mill Corporation.

"The Blue Star Plan"—R. J. Canniff, Chairman, Commercial Section, American Gas Association; Arthur M. East, Vice-President, Home Owners' Service Institute; J. W. West, Jr., Field Representative, Commercial Section, American Gas Association.

"Getting Your Share of the Consumer's Dollar" — Robinson Murray, Breeding, Murray & Salzer, Advertising, Philadelphia.

"The Function of a Gas Company Sales Department"—C. E. Paige, Vice-President, Brooklyn Union Gas Company.

Evening Round-Table Discussions

"How Can We Secure Co-operation of Plumbers and Department Stores?"

"Selling More Uses for Gas—Clothes Drying, etc."

"The Architect and the Speculative Builder—and Cheap Appliances."

"The Apartment House Problem—How to Increase This Load."

"What the A. G. A. Laboratory Is Doing and What It Means to Us."

"What About Oven Sizes—Can We Lose the 18-inch Oven?"

Details regarding the cost and accommodations can be obtained from American Gas Association headquarters, New York City.

Gas Ranges Approved in Laboratory

New York City.—The following models of gas ranges, having been submitted by their manufacturers to the Gas Appliance Testing Laboratory, in Cleveland, Ohio, and there tested, have been officially approved for compliance with American Gas Association safety requirements. These models are now entitled to bear the official approval seal of the Association.

This list represents the result of testing only one model from each manufacturer or division, selected by the maker for the first cycle of tests, in which all manufacturers were invited to participate. Other models by the same manufacturers, submitted for the second cycle, together with products of other manufacturers, are now being tested, and additional lists will be issued until the approvals are complete.

The Association acknowledges with all appreciation the hearty co-

operation of gas range manufacturers in this undertaking, into which has been built, in addition to the organization and equipment, the hopes and determination of the gas industry of America for better service and safety to the public. We further acknowledge with gratitude the assistance and hearty co-operation of the United States Bureau of Standards, the Bureau of Mines, the Public Health Service and the National Association of Master Plumbers.

In response to a suggestion from the Executive Board, the Association has received from many gas companies assurances of support by limiting the sale of gas ranges to those approved by the Laboratory. Some companies will for the present, in pursuance of their policy, recognize also all models made by manufacturers who appear on the following first approval list, until such time as the testing of all models submitted has been completed. Of course only those models actually approved may bear the seal.

The Laboratory approval will permit the manufacturer to display on his range this distinctive seal of approval. This approval mark will make it possible for range manufacturers, as well as local gas companies, to advertise in a very simple way ranges of merit. Unquestionably, after a short period of such advertising, the public will look for this mark of approval, and it will become the basis for purchasing. In order to accomplish this in the shortest space of time, the Board has asked gas companies to request manufacturers who are entitled to the approval seal to use it, and both manufacturers and gas companies should be encouraged to use the seal as the basis for their advertising.

* * *

H. D. Whitcomb Dies at Office

Henry D. Whitcomb, vice-president in charge of gas operation of the Public Service Electric & Gas Co., died from cerebral hemorrhage at his office.

In 1901 Mr. Whitcomb came to Newark and became assistant engineer in the Essex & Hudson Gas Co. With the formation of the Public Service Corporation of New Jersey he became general manager of its gas department. When the Public Service Gas Company was formed in 1909 he was made vice-president and general manager, and he continued in this position until 1924, when with the formation of the Public Service Electric & Gas Co., he became vice-president in charge of gas operation.

Born in Richmond, Va., on September 26, 1869, Mr. Whitcomb was graduated from Stevens Institute of Technology in 1892. He went to work immediately as a cadet engineer with the U. G. I. at the company's headquarters in Philadelphia. He became construction engineer, in which capacity he traveled all over the country in connection with the company's various properties. At one time

H. D. Whitcomb

he acted as temporary superintendent of the Atlantic Gas Company and of the Savannah Gas Company. In 1898 he became assistant to Rollin Norris as traveling expert operating engineer.

Surviving Mr. Whitcomb are his wife, two sons, Donald and John Whitcomb, and a daughter, Mrs. David Keep.

Trade Name	Model No.	Manufacturer
A-B	505-L	A-B Stove Company
York	601-R	Abendroth Brothers
Fortune	16-41	Abram Cox Stove Company
Dangler	2472 SF	American Stove Co., Dangler Div.
Clark Jewel	G-462	American Stove Co., Geo. M. Clark Div.
New Process	116-42	American Stove Co., New Process Div.
Quick Meal	9-606	American Stove Co., Quick Meal Div.
Detroit Jewel	602-L	Detroit Stove Works
White Star	1016 L Serial #1	Detroit Vapor Stove Company
Eriez	660-9 L	Eriez Stove & Mfgr. Company
Estate	2661 TR	Estate Stove Company
Glenwood	M 418-RT	Glenwood Range Company
Garland	158-8-3 V	Michigan Stove Company
Quality	1837-S	Roberts & Mander Stove Company
Quick Service	164 C. G. R.	Somerville Stove Works
Acorn	461-LS Serial #5291	Standard Gas Equipment Corp., Acorn Div.
Oriole	830	Standard Gas Equipment Corp., Oriole Div.
Triplex	20-16-R	Standard Gas Equipment Corp., Triplex Div.
Vulcan Smoothtop	OD 450 SE	Standard Gas Equipment Corp., Vulcan Div.
Tappan	W 618 RT	Tappan Stove Co., The
Tinnerman	1184	Tinnerman Stove & Range Company
Wincroft	418 R	Wincroft Stove Works

Plumbing and Heating Salesmen to Hold Convention

On May 27th, 28th and 29th, 1926, the National Association of Plumbing and Heating Salesmen will hold its first annual convention at the Book Cadillac Hotel, Detroit, Michigan.

The purpose of this convention is not merely to bring the men together for a good time; it is not to give them a three-day vacation away from profitable sales work—but it is to make a dollars-and-cents profit.

It is the purpose of this convention to accomplish several things.

1. The imparting and exchange of business information.
2. The establishment and clarification of matters of policy.
3. Personal acquaintanceship within an organization.
4. Effecting a national stimulus.
5. The contribution of new ideas for the future betterment of the industries.

Prominent speakers have promised to address us during the course of our convention.

While the convention is strictly business, there will be entertaining features such as three Get Together Luncheons during the convention, as well as the Banquet and the Bosses' Night.

The May meeting is going to be more than a convention, it is going to be an education. This convention is going to be an eye-opener for every alert salesman in our industries who has vision enough to realize that the plumbing and heating industries are a most important factor in our commercial and social activities.

The theme of the convention is "The Betterment of Business through the Betterment of Salesmanship."

Mohawk Valley Utility Report

The report of the Mohawk Valley Company and the Rochester Gas and Electric Corporation for 1925 shows a net income of $1,489,293 applicable to Mohawk Valley Company stock, equal to $1.98 a share, against $1,383,191 or $1.84 a share in 1924. The combined income account shows a gross of $10,445,908, against gross of $9,idends was $439,741, against $483,575.

* * *

Gas By-Products Plant for Norfolk

Action of the City Gas Company in arranging for a new scale of gas rates, which will provide for a rate for large consumers calculated to attract new industries to this section, is a stepping stone to the installation of the gas by-products plant, suggested by City Manager Truxtun, which would further encourage such industries as iron foundries and similar plants to Norfolk.

J. A. Dautremont, of Aurora, Ill., an industrial gas engineer, has been employed by the City Gas Company to devote his time to development of the use of gas in industries. Several small industries in Norfolk already have made successful experiments with the use of gas in the manufacture of their commodities, and with the decrease in the rate to such consumers they will be able to install gas furnaces in their plants.

The new industrial gas rate scale is similar to that of the system of water rates now in effect here, whereby the rate decreases as the amount of consumption increases. The by-products plant, as proposed by City Manager Truxtun and which is under consideration by the gas company officials, would have a tendency further to decrease the cost of gas for industrial purposes. Norfolk is strategically located for the assembling of materials used in the manufacture of by-products gas, according to statistics compiled here.

Norfolk has never had an industrial gas rate before, and the installation of the new rate has been brought about, J. Frank McLaughlin, vice-president of the company said, in an effort on the part of the company to develop new industries here and at the same time make its gas plant widely effective.

* * *

New Business Year Book of the Henry L. Doherty Co.

Henry L. Doherty & Company have issued a New Business Department Year Book which describes the results obtained by the New Business Departments of the Public Utilities Divisions, operated by that company. This booklet contains a short report by each of the New Business Managers of the various Public Utility Companies and commences with an introduction by Thomas F. Kennedy, Manager of the New Business Departments of the Henry L. Doherty & Company.

In this introduction it is mentioned that during 1925 there was a gain of over 8,000 gas customers or 6% increase over 1924. The New Business Departments were also active in promoting industrial uses of gas.

* * *

New Gas Concern

Hazleton, Pa.—The P. P. & L. Company, through one of its subsidiary organizations, is to give Tamaqua a new gas plant. Supt. Peter McCarron appeared before town council and secured permission for this new project.

* * *

Consolidated Utilities Company Organized

Bismarck, N. D.—A new company has been organized under the name of the Consolidated Utilities Company, Inc., in North Dakota, for acquiring and operating gas properties in that state. This company now owns the gas properties at Bismarck and Valley City, North Dakota. The president of the new company is Senator Frank E. Ployhar, former owner of the Valley City and Bismarck gas properties. The vice-president and general manager is James Trimble. Mr. Trimble is also the president of the Utilities Service Corporation of Delaware, which owns the common stock of the Consolidated Utilities Company. Mr. Trimble says that his company intends to spend in the neighborhood of $100,000 this year on improvements and extensions.

* * *

Norfolk Gas Company Granted Higher Rates

Richmond, Va.—A rate increase approved by the city manager and city attorney of the city has been granted the City Gas Company, of Norfolk, by the State Corporation Commission.

Schenectady Consumers to Get Industrial Rates

Schenectady, N. Y.—Consumers of gas in large quantities in the Schenectady district served by the Adirondack Power and Light Corporation now enjoy special industrial rates. The new gas tariff, however, affects only those consumers who use quantities of gas amounting to 100,000 cubic feet or more a month.

At the same time, the new tariff provides for a modification of discount rates for amounts consumed over 100,000 cubic feet per month. The revised discount is proportionate to the reduction in cost of the gas to the consumer. In other words, the modified schedule will not effect any net changes in gas bills to consumers affected by that new tariff.

A reduction from $1 to 91 cents per 1,000 cubic feet for all gas consumed in excess of 100,000 cubic feet per month is provided in the new tariff. The discount rate is lowered from 10 cents per 1,000 cubic feet allowed on bills paid on or before the discount date, to one cent per 1,000 cubic feet. The purpose of the new schedule is to make the tariff more equitable for industrial users of gas.

* * *

New Rice County Gas Co.

Topeka, Kan.—The Rice County Natural Gas Company has applied to the state public service commission for a certificate of authority to engage in business as a public utility. The new gas company will supply gas for the towns of Lyons, Nickerson and Sterling.

Under the plan outlined in the application the new company will buy gas from the Laritan Gas Company at the city gates of Hutchinson.

* * *

Willard Transferred From Vulcan to Oriole Division

New York City.—Harold A. Willard, for ten years sales representative for Vulcan and Smoothtop Ranges, has been transferred from the Vulcan Division to the Oriole Division of the Standard Gas Equipment Corporation of New York City. Mr. Willard will travel the territory from North Carolina to Florida inclusive, including Eastern Tennessee and Havana, Cuba.

William W. Bodine Elevated by U. G. I.

Philadelphia, Pa.—William W. Bodine has been elected general manager of the United Gas Improvement Company at an organization meeting of the Board of Directors. He also is a vice-president of the company and had been assistant general manager. Other senior officers re-elected by the directors were:

Lewis Lillie, Paul Thompson, Philip H. Gadsden, G. W. Curran, J. T. Hutchings, J. A. Pearson, F. J. Rutledge and John B. Klumpp, vice-presidents; G. W. Curran, secretary, and L. W. Morris, treasurer.

Samuel T. Bodine, president, and directors of the company were re-elected at the annual meeting of stockholders. which preceded the directors' meeting. Only routine business was transacted at the stockholders' meeting, the annual report, previously issued, and all acts of the officers and directors being approved by a vote of 1,148,618 shares, or more than seventy per cent. of the company's outstanding capital stock.

By a rising vote the shareholders approved a resolution that had been adopted by the directors, eulogizing the late Randal Morgan, who died in March. He had been associated with the company for forty-four years and at the time of his death was chairman of the Executive and Finance Committee and a member of the Board of Directors.

"Throughout this period of forty-four years," the resolution read, "he devoted his untiring energy and his high abilities to the upbuilding of this company, and its growth to its present position of strength and influence is due in large measure to this devotion."

* * *

B. M. Fast Appointed Sales Manager

Ithaca, N. Y.—B. M. Fast, who for the past fourteen years has been associated with the Penn Electric Corporation as Superintendent of New Business and Power Engineer, located at Erie, Pa., was transferred on March 1st to the New York office of the Associated Gas and Electric Company, now owners of the Penn Electric Corporation, as Sales Manager for the entire associated system.

Mr. Fast will collaborate with the local managers of the various associated properties, spending most of his time in the field.

* * *

T. H. Rice Appointed Manager

Dover, N. J.—Thomas H. Rice has been appointed manager of the New Jersey Gas & Electric Company and the Boonton Gas Company in Dover, N. J.

H. W. Battin, who has been in charge of the New Jersey Gas & Electric Company since it was acquired by A. E. Fitkin & Company, will again resume his duties as assistant gas engineer of the General Engineering & Management Corporation, 165 Broadway, New York City.

Mr. Rice has had a wide experience in managing gas properties in various parts of the country and for the past six years has been manager of the gas department of the Tide Water Power Co., Wilmington, N. C., which property is operated and controlled by the A. E. Fitkin & Company.

* * *

Gas Engineering at University of Michigan

Ann Arbor, Mich.—The University of Michigan has issued a bulletin on the program in Chemical Engineering and graduate courses in Gas Engineering among other engineering curricula. There are special facilities at Ann Arbor for students interested in Gas Engineering.

* * *

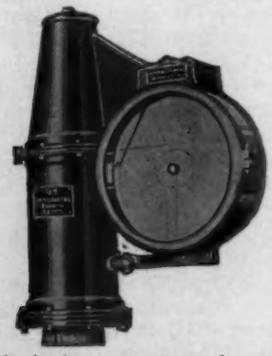
Enlarge Biloxi Gas Equipment

Guilford, Miss.—Improvements in the gas storage facilities for Biloxi to cost $150,000 have been announced by D. G. Skinner, Mississippi Coast, manager of the Southwestern Gas and Electric Co. The installation of additional manufacturing equipment to produce 800,000 cubic feet of gas a day is included in the improvements. Additional storage capacity of 50,000 cubic feet will be added also.

The total output of the Biloxi plant will be raised to 1,500,000 daily cubic feet and the total storage output to 250,000 cubic feet.

The Lambert Recording Demand Flowmeter

There has long been a general need in the gas industry for a meter that will record directly the flow of gas through it. This need has become more accentuated recently because of demand rates, increased industrial gas uses and applications, district send out analysis, large natural gas flow consumption and generally wher-



ever it is important to know the rate of flow, the times of gas consumption, and to have a complete history of a supply of gas so that reference can be made to it at later times.

The Lambert Recording Demand Flowmeter answers all these requirements and is a meter which indicates and records continuously and instantaneously the quantity flow of gas through it.

It is the outgrowth of a request from the Demand Meter Committee of the A. G. A. for a meter which will meet the requirements of that Committee's recommendations for a device with which to continually record the gas demand by an industrial consumer.

Construction of Meter

Briefly described, it consists of two concentric tubes, the inner one having a vertical slot or opening. Inside of the inner tube is a float or piston which moves or slides easily up or dov n. The gas inlet is part of the inner tube, while the gas outlet is part of the outer tube.

As the gas enters the inner tube it lifts the float in finding an avenue of escape and then as the float moves upward it exposes part of the vertical slot, permitting the gas to pass through it into the outer annular chamber and from there through the outlet to its destination. When the gas consumption per hour increases or decreases the greater or smaller flow pushes the float to a higher or lower position, exposing a greater or smaller portion of the vertical slot.

It should be evident that the height to which the float rises is directly proportional to the volume flow of gas. In other words, this meter becomes really a variable orifice device with a constant pressure differential.

To the top of the float is connected a very simple and positive link movement which is directly connected to a mechanical chart recorder and as the float rises and falls it causes the arm or pen or the recorder to move back and forth across the chart correspondingly.

The recorder is fitted with a seven-day clock and thus a chart giving a record of the flow of gas through the meter for a period of seven days is gotten. From this chart one can read directly in cubic feet per hour the gas consumption at any one time throughout the seven days.

Advantages

The advantages of this type of Demand Meter are:

1.—It is exceedingly simple and positive in its action.

2.—It gives a continuous line record which is absolutely a true story or history of the quantity flow of gas.

3.—It is a complete independent metering unit in itself and can be installed without affecting or disturbing any other metering device that may exist.

4.—Its capacity can be made equal to that of any requirement, thereby being peculiarly adaptable to large industrial plants where ordinarily a battery of dry meters are required. At present the Lambert Meter Company builds these recording meters with capacities up to 20,000 cubic feet per hour.

5.—The divisions on the chart being equally divided, it becomes a simple matter to integrate the total amount of gas passed through for any period of time.

6.—It can be checked readily against dry meters.

7.—It can be installed anywhere in the gas supply line.

Hall-Will Co., Erie, Pa., Will Manufacture Threading Machines

Hall-Will Company, Inc., is a new corporation that will manufacture a complete line of pipe, bolt and nipple threading machines. The President of the company is Leslie Hall, former Vice-President and General Manager of the Williams Tool Corporation, and has designed many new types of threading machines. The first of their new type will have a capacity of one-quarter inch to two inches and will be followed by a line of larger machines to be known as the "Hall-Will Super Six, Eight and Twelve." The machines are all of the portable type, power driven. C. Frank Williams, former Superintendent of the plant of the Williams Tool Company, will be Vice-President. J. M. McLeod will be in charge of manufacturing, and G. C. Hay, Sales Manager.

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Gas Lights of Broadway

Pittsburgh, Pa.—The program "Gas Lights of Broadway" will be an offering of the Ruud Light Opera Hour to be broadcast over Station KDKA at 9 p. m. Eastern Standard time, on May 24, 1926. This program was postponed when first announced.

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Contracts Awarded

There are many evidences of increased activity among the Gas Companies of the country. A fair barometer of this activity may be obtained from the order books of the more prominent engineering and construction companies. According to reports from The U. G. I. Contracting Co., that company has orders for a variety of work, such as the following:

For the Phila-Suburban Gas & Electric Company it is building a pusher plant including the building and all necessary equipment required to handle the gas from the new 5,000 M. cu. ft. holder which it also has under erection.

For the Sioux City (Ia.) Gas & Electric Co., it is installing a complete steam regenerator plant which will take the exhaust steam from the various units of the plant and deliver same to the carburetted water gas sets.